REMARKS

Claims 2, 3, and 5-19 are pending and stand rejected.

Claims 2, 7 and 16 have been amended to incorporate part of claim 5 where the polymeric additive comprises 20-80% methyle methacrylate and 20-80% butyl methacrylate.

Claims 5, 13 and 18 have been amended to place the claims in correct form.

Claims 10-12 and 19 have been cancelled.

Applicant's Invention:

Applicant's claimed invention is a composite product comprised of a layer of polystyrene structural plastic having a 0.1 to about 2.5 mm thin protective layer of a blend of an acrylic ester polymer and acrylic polymeric additive. Specifically, the Applicant has discovered that polystyrene and an acrylic can be co-extruded to produce a multilayered sheet exhibiting strong adhesion between acrylic and polystyrene layers if the acrylic layer is a blend of an acrylic ester polymer and acrylic polymeric additive. The fact that a strongly adhering multiple-layer sheeting can be obtained from an acrylic and polystyrene in accordance with the present invention is indeed surprising, since other polymeric materials normally incompatible with polystyrene cannot be co-extruded with polystyrene to yield a satisfactorily adhering multilayered product.

35 U.S.C. § 103(a)

Claims 2-19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tadokoro et al, U.S. Patent Number 6,147,162 in view of Owens (U.S. Patent 3,793,402), Toritani et al (U.S. Patent Number 5,169,903) and Birch et al (U.S. Patent Number 6,420,050). The Tadokoro reference fails to teach or disclose all of the elements of Applicant's amended claims, and therefore fails to present a *prima facie* case of

anticipation. Specifically the Tadokoro reference fails to teach or disclose the presence in the protective layer (capstock) of an acrylic polymer additive that increases the adhesive strength between the layers and comprises 20-80 percent methyl methacrylate and 20-80 percent butyl methacrylate.

The Tadokoro reference describes a simultaneous injection molding/lamination process producing a molded object having the laminated film on its surface. The laminate is a film extruded from an impact modified methyl methacrylate resin. The resin is combined with known impact modifiers (as described in the Owens '402 and Toritani references), the impact modifiers consisting of a hard core, an elastomeric middle layer, and a hard shell.

The problem solved by the Tadokoro reference was to provide a laminating film that could endure the high temperatures of melt extrusion, yet be flexible enough to expand into the shape of a mold. The problem was solved by making a film of impact modified polymethylmethacrylate, where the impact modifier allowed the film to tolerate the high stress of molding and lamination.

Applicant's invention solves the problem of the poor adhesion of acrylic films to polystyrene structural plastics. The problem is solved by the inclusion in the capstock of an acrylic polymeric additive compriscing 20-80 percent methyl methacrylate and 20-80 percent butyl methacrylate.

Applicant's claims optionally include 0-60% modifiers, such as the impact modifiers of Tadokoro (see paragraphs 0036, 0037 and 0038). In addition to any impact modifier or other modifier, Applicant requires an acrylic polymer additive that increases the adhesive strength between the layers. The Tadokoro reference fails to recognize the problem of commercially unsatisfactory adhesion between a polystyrene structural plastic and an acrylic capstock resin, and therefore fails to disclose or suggest the presence of Applicant's claimed acrylic polymeric additive. The impact modifiers of Tadokoro – as exemplified in the Owens and Toritani references – do not increase the adhesion between an acrylic capstock and a polystyrene structural plastic. As can be seen in Example 1 of the present invention, impact modified acrylics show poor adhesion to HIPS, but when the acrylic resin – either with or without an impact modifier – is formulated with the acrylic polymeric additive of the invention, good to excellent adhesion results.

Thus the Tadokoro reference fails to present a *prima facie* case of obviousness under 35 U.S.C. 103(a) since it fails to describe or suggest Applicant's acrylic polymeric additive; fails to describe or suggest Applicant's acrylic polymeric additive blended with an acrylic ester polymer in combination with a layer of polystyrene structural plastic. The Tadokoro reference teaches away from Applicant's claims by exemplifying only compositions without Applicant's claimed acrylic polymeric additive. One of skill in the art would not be able to arrive at Applicant's claims by routine experimentation based on the Tadokoro reference, since said reference fails to recognize the problem of adhesion.

Owens and Toritani

The Owens and Toritani references merely exemplify the impact modifiers used in the Tadokoro reference, and also fail to teach or suggest Applicant's acrylic polymeric additive comprising 20-80 percent methyl methacrylate and 20-80 percent butyl methacrylate. BMA is not exemplified in any of the numerous examples in the Owens and Toritani references. These references fail to describe or suggest Applicant's acrylic polymeric additive blended with an acrylic ester polymer in combination with a layer of polystyrene structural plastic.

Birch

The Examiner states that the Birch reference discloses a process and molded article and therefore it would have been obvious to a person of ordinary skill in the art ttilize the disclosure of Birch et al in the invention of Tadokoro et al. to produce laminated articles.

As discussed in a previous reply in the present case, the Birch reference fails to teach or suggest Applicant's claim limitations of 1) a polystyrene structural plastic, or 2) a protective layer that is a blend of an acrylic ester polymer and an acrylic polymeric additive.

1) The Birch reference fails to teach or suggest a polystyrene structural plastic. The Birch reference teaches instead crystalline or semi-crystalline polyolefins, primarily polyethylene, and polypropylene. The Examiner points to Claim 12 of Birch in which the aromatic vinyl polymer of the core material comprises polystyrene. This claim depends

from claim 9 in which the structural polymer contains a blend of 30 to 70 percent of an olefinic polymer, and 7 to 65 percent of an aromatic vinyl polymer. The polyolefin/polystyrene polymer blend must still have the characteristics of a semicrystalline or crystalline olefinic polymer (col. 9, lines 8 and 9). The addition of some polystyrene does not change the basic olefinic nature of the core material. One in the art would not be motivated by the teaching of the Birch reference concerning a polyolefin blended with some polystyrene, to practice a polystyrene core material. These are different materials with different properties. Nor would one in the art arrive at Applicant's claims from the Birch reference by routine experimentation, since the polystyrene additive is not shown to be an effective variable. Finally, the Birch reference teaches away from a core material containing any polystyrene by exemplifying only polypropylene homopolymers as the core materials, demonstrating that polystyrene, or any other additive, is not required for the invention to work.

2) The Birch reference fails to teach or suggest Applicant's claim limitation of a protective layer that is a blend of an acrylic ester polymer and an acrylic polymeric additive. The Birch reference does disclose that the cap layer have at least 50 percent of poly(meth)acrylate ester polymers, or blends thereof. However, the capstock composition of the Birch reference is different from Applicant's claims in that it also requires either a block copolymer of a vinyl aromatic monomer and an aliphatic conjugated diene, or else an olefin acrylate copolymer. There is no teaching or suggestion that the acrylic capstock must be a blend of anything, much less a blend of an acrylic ester polymer and an acrylic polymeric additive. The Birch reference teaches away from such a capstock by teaching and exemplifying only capstocks containing block copolymers.

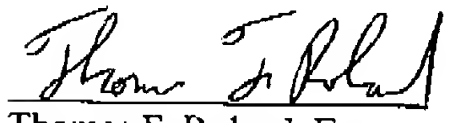
3) Further, the Birch reference solves a different problem While the problem solved by the Birch reference does relate to adhesion of coextruded layers of plastics, it is for adhesion to a polyolefin, not a polystyrene. The Birch problem is solved by matching the chemical properties of the capstock to the polyolefin core material through the incorporation of similar monomers or block copolymers, i.e. blending into the acrylic capping layer either vinyl aromatic block copolymers, or olefin acrylate copolymers. The

problem solved by Applicant is the adhesion of acrylic resin to polystyrene structural plastics, and the solution is to coextrude a polystyrene structural plastic with a blend of an acrylic ester polymer and an acrylic polymeric additive. Applicant's solution is surprising, especially given that the claimed capstock does not contain any units derived from the styrene of butadiene monomer units found in various polystyrenes.

The disclosure of Birch et al. fails to cure the deficiencies of the Tadokoro reference of not disclosing or suggesting Applicant's claims.

Since the cited references fail to present *prima facie* cases of obviousness, Applicant believes that the reasons for rejection have been overcome, and the claims herein should be allowable to the Applicant. Accordingly, reconsideration and allowance are requested.

Respectfully submitted,



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